REMARKS

The Office Action dated November 17, 2006, has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 19, 24 and 25 have been amended to more particularly point out and distinctly claim the subject matter of the invention. No new matter has been added. Claims 1-26 are submitted for consideration.

Claims 1-10 and 13-26 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,636,748 to Latham (hereinafter Latham). The rejection is traversed as being based on a reference that neither teaches nor suggests the novel combination of features clearly recited in claims 1-10 and 13-26.

Claim 1, upon which claims 2-8 depend, recites a charge pump circuit to supply current to a controlled oscillating circuit. The charge pump circuit includes a first switch including a first state, the first switch coupled to a gate of an output diode. The charge pump also includes a second switch including a second state opposite from the first state, the second switch coupled to a source of the output diode. The second switch provides a charge up current to the output diode when the second state includes an ON state.

Claim 9, upon which claims 10-17 depend, recites a circuit including a controlled oscillator controlled by an output signal having an offset current. The circuit also includes a charge pump circuit to add a charge up current to the offset current in response to a signal from a phase/frequency detector. The charge pump circuit includes a first

switch having a first state and a second switch having a second state to add the charge up current to the offset current, in which the first state is opposite the second state. The circuit further includes an output diode coupled to the first and second switches to provide the charge up current to the offset current.

Claim 18, upon which claims 19-22 depend, recites a charge pump circuit coupled to an oscillating circuit. The charge pump includes a current source and a source switch coupled to the current source to supply a charge up current. The charge pump also includes an output diode having a source coupled to the source switch, wherein the output diode receives the charge up current. The charge pump further includes a gate switch coupled to a gate of the output diode to form a circuit to hold a bias voltage from the gate.

Claim 23, upon which claims 24-26 depend, recites a method for adding a charge up current. The method includes setting a first switch coupled to a gate of an output diode to a first state and setting a second switch coupled to a source of the output diode to a second state. The second state is opposite the first state. The second switch provides a charge up current to the output diode.

As outlined below, Applicant submits that the cited reference of Latham does not teach or suggest the elements of claims 1-26.

Latham discloses a current pump consisting of a single current source and identical switching paths. It can be implemented using only one type of semiconductors. FIG. 2 of Latham is a block diagram of a phase-locked loop embodying the improved current pump. An integrating capacitor is connected across a bridge, each leg of which

contains a switch. A PUMP UP command causes switches 10 and 13 to close, completing a current path for current determined by current source 14 to flow in such direction as to charge capacitor 3. The PUMP DOWN command closes switches 11 and 12, completing the path for the source current to flow in such a direction as to discharge capacitor 3. Prior art difficulties of matching the characteristics of two current sources are eliminated by providing a single current source for both the PUMP UP and PUMP DOWN currents. Difficulties of matching the transient responses of different switching paths are minimized by providing switches that all must pass current in the same direction; they can thus be identical and constructed of the same semiconductor types. Means are provided for controlling the biasing voltages on switching diodes so as to minimize their switching times. See at least Figure 2 and Col. 3, lines 35-63 of Latham.

Applicant submits that Latham does not teach or suggest each of the elements recited in claims 1-10 and 13-26. Each of the present pending claims recites a first switch including a first state, the first switch coupled to a gate of an output diode and a second switch coupled to a source of the output diode, the second switch provides a charge up current to the output diode when the second state includes an ON state. Latham does not teach these features. Latham teaches that a PUMP UP command causes switches 10 and 13 to close, completing a current path for current determined by current source 14 to flow in such direction as to **charge the capacitor** and the PUMP DOWN command closes switches 11 and 12, completing the path for the source current to flow in such a direction as to **discharge** the capacitor. There is no teaching or suggestion in

Latham of the first switch coupled to a gate of an output diode and the second switch providing **a charge up current to the output diode** when the second state includes an ON state, as recited in the presently pending claims. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. §102(b) should be withdrawn because Latham fails to teach or suggest each feature of claims 1-10 and 13-26.

Claims 11 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Latham in view of U.S. Patent No. 6,430,244 to Ryu (hereinafter Ryu). According to the Office Action, Latham teaches all of the elements of claims 11 and 12 except for a multi-modulus divider coupled to the phase/frequency detector and wherein the multi-modulus divider outputs a feedback signal. Therefore, the Office Action combined Latham and Ryu to yield all of the elements of claims 11 and 12. The rejection is traversed as being based on references that neither teach nor suggest the novel combination of features clearly recited in independent claim 9, upon which claims 11 and 12 depend.

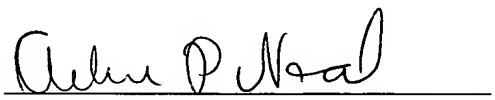
Ryu relates to a digital phase-locked loop circuit producing an output pulse or clock pulses in phase with a reference clock input. Ryu does not cure any of the deficiencies of Latham, as noted above. Specifically, Ryu does not teach or suggest an output diode coupled to the first and second switches to provide the charge up current to the offset current, as recited in claim 9, upon which claims 11 and 12 depend. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because neither Latham nor Ryu, whether taken singly or combined, teaches or suggests each feature of claim 9 and hence, dependent claims 11-12 thereon.

As noted previously, claims 1-26 recite subject matter which is neither disclosed nor suggested in the prior art references cited in the Office Action. It is therefore respectfully requested that all of claims 1-26 be allowed and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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